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| EXAMINER | |
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| ADDY, ANTHONY S | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/784,182 | SAWANO, HIDEKI | |
| | **Examiner** | **Art Unit** | |
| | ANTHONY S. ADDY | 2617 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *30 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

## DETAILED ACTION

1. This action is in response to applicant's amendment filed on September 30, 2008. **Claims 1-20** are pending in the present application.

### *Response to Arguments*

2. Applicant's arguments filed on September 30, 2008 have been fully considered but they are not persuasive.

With respect to applicant's argument that, "the combination of Murphy, Calvert, Crabtree and Gwon, alone or in combination fails to discuss or suggest calculating only a distance between the measuring apparatus and the search object, wherein the distance is calculated ***independent of*** a direction of the search object with respect to the measuring apparatus (see page 11, third paragraph and page 12, first paragraph of the response)," examiner respectfully disagrees and maintains that Murphy meets the limitations as claimed, since Murphy teaches, the tracking units 10a-10c are attached to moving vehicles 42a-42c and by employing more than one mobile tracking unit, the precise location of object 12 is more easily calculated by base station 20 (see col. 10, lines 3-56 and Fig. 3; shows mobile tracking units 10a-10c attached to moving vehicles 42a-42c [*i.e., reads on the limitations "each of the plurality of measuring apparatuses is mobile"*]). Murphy further teaches the distance of object 12 is determined from the tracking units 10, and the distance is calculated only between each of the mobile tracking units 10a-10c attached to moving vehicles 42a-42c from object 12 (see col. 4, lines 43-59 and col. 10, lines 43-45). Furthermore, the Examiner respectfully disagrees

with applicant's argument that, Murphy as relied on by the Examiner, discloses that a tracking unit of a position determining device determines the direction, range, and bearing of the search object, and Murphy does not disclose calculating **only** a distance between the position determining device and the search object that is **independent of** a direction of the search object with respect to the position determining device (see page 12, first paragraph of the response). Examiner reiterates that, although, Murphy further teaches tracking units 10 ***also*** determines the direction or bearing from which the signal is transmitted (see col. 4, lines 55-56), Murphy does not teach the distance calculated by tracking units 10 is ***dependent*** on the determined direction or bearing, hence the calculated distance is not dependent on other variables (*i.e., the direction, range and bearing of the search object*) as asserted by applicant, therefore the teachings of Murphy meets the claimed limitations of “calculating only a distance between the measuring apparatus and the search object, wherein the distance is calculated ***independent of*** a direction of the search object with respect to the measuring apparatus,” since the distance calculated by the tracking units 10 is ***independent*** of other variables such as the direction, range and bearing of the search object.

With respect to applicant’s argument that, “the combination of Murphy, Calvert, Crabtree and Gwon, alone or in combination fails to discuss or suggest wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received (see page 12, second and third paragraphs of the response),” examiner respectfully disagrees and maintains that the

combination of Murphy, Calvert, Crabtree and Gwon meets the limitations as claimed. Examiner reiterates that Crabtree teaches a handheld locator unit (*i.e., reads on the request apparatus*) for locating an object (*i.e., reads on a search object*), wherein a transceiver is attached to the object to be located to enable a radio frequency signal from the handheld locator unit to be received (see col. 8, lines 39-46). According to Crabtree, the transceiver of the object periodically activates its radio frequency receiver and checks for the presence of transmissions of the form emitted from the handheld locator unit, and if a transmission is detected, the transceiver receives the digital address code transmitted by the locator and compares the received address code within a stored address code within the transceiver, and if the digital address code transmitted by the locator matches the code stored in the transceiver, the transceiver will activate its transmitter and send a short duration RF signal back to the locator to facilitate determining the distance and/or direction from the user's position to the transceiver attached to the object (see col. 8, lines 46-58). Crabtree further teaches a bearing display element indicates the bearing of the signal received from the transceiver with respect to ***a center axis*** of the locator unit and illustrates in Figure 1 how the locator unit is centered with respect to the transceiver of the object within a search range (see col. 16, lines 35-45 and Figs. 1 & 5). Hence, the teachings of Crabtree as discussed above in combination with Murphy, Calvert and Gwon meets the claimed limitations of "wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received."

In view of the above, the 35 U.S.C. 103(a) rejections using Murphy, Calvert, Crabtree and Gwon with regard to **claims 1-20** are proper and are maintained as repeated below.

### ***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Murphy, U.S. Patent Number 6,094,164 (hereinafter Murphy)** and **Calvert et al., U.S. Publication Number 2002/0102989 A1 (hereinafter Calvert)** and **Crabtree et al., U.S. Patent Number 6,788,199 (hereinafter Crabtree)** and further in view of **Gwon et al., U.S. Publication Number 2004/203904 A1 (hereinafter Gwon)**.

Regarding claims 1 and 20, Murphy teaches a measuring apparatus cooperating with a service device that provides position information of a search object (see col. 3, line 62 through col. 4, line 12, col. 6, lines 22-50 and Fig. 1B; shows tracking units 10A-10C [*i.e., reads on a measuring apparatus*] cooperating with a base station 20 [i.*e., reads on a service device*] that provides position information of an object 12 [*i.e., reads on a search object*]), comprising: a unit for transmitting and receiving information (see col. 7, lines 1-14 and Fig. 2); a unit calculating only a distance between the measuring apparatus and the search object, the distance being independent from a direction of the search object with respect to the measuring apparatus (see col. 4, lines 43-59, col. 10, lines 43-45 and Figs. 4A-4C [*i.e., the teaching of Murphy that tracking unit 10 (i.e.,*

*measuring apparatus) determines the distance of object 12 (i.e., the search object) meets the claimed limitations of "a unit calculating only a distance between the measuring apparatus and the search object, the distance being independent from a direction of the search object with respect to the measuring apparatus"*]); a unit acquiring present position information of the measuring apparatus (see col. 7, lines 15-21 and Fig. 2); and a unit transmitting the present position information and the distance information to the service device (see col. 4, lines 43 through col. 5, line 9, col. 7, lines 1-14 and Fig. 2), wherein the service device is placed at a predetermined fixed location (see col. 4, lines 60-67, col. 7, lines 59-64 and Fig. 1B; shows a base station 20 placed at a predetermined fixed location from tracking units 10A-10C), and wherein the measuring apparatus is mobile and a plurality of measuring apparatuses located around the search object cooperate with the service device (see col. 10, lines 3-56 and Fig. 3; shows mobile tracking units 10a-10c attached to moving vehicles 42a-42c [*i.e., reads on the limitations "measuring apparatus is mobile"*]).

Murphy fails to explicitly teach the measuring apparatus accepting from a request apparatus a search request for searching the position of the search object.

In an analogous field of endeavor, Calvert teaches a method and apparatus for accurately locating a communication device in a wireless communication system, wherein a requesting device such as a wireless/wireline telephone device sends a request for the location of a communication device to a wireless system controller (see p. 2 [0023], p. 4 [0034] and Fig. 1 [i.e. wireless/wireline telephone devices 101, 102 & 113 reads on a request apparatus requesting position information from wireless system

controller 107 [i.e. reads on a measuring apparatus] of a communication device 101 [i.e. reads on a search object] in the wireless system 100]). According to Calvert, the search request preferably includes the identification (ID) or address of the communication device to be located and the address or ID of the requesting device to which the location is to be sent (see p. 4 [0034]).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Murphy with Calvert to include the measuring apparatus accepting from a request apparatus a search request for searching the position of a search object, in order to accurately locate a communication device by including the identification (ID) or address of the communication device to be located in a search request to the system infrastructure as taught by Calvert (see p. 2 [0020] and p. 4 [0034]).

The combination of Murphy and Calvert fails to explicitly teach wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received.

In an analogous field of endeavor, Crabtree teaches a system and method for locating objects such as people, pets, and personal articles, wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received (see col. 8, lines 40-65 and Fig. 1).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Murphy and Calvert with Crabtree, wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received, in order to easily and securely locate search objects within a search range by transmitting a modulated radio frequency signal including a digital address code that is compared to a stored address code in the search object to validate the requesting apparatus as taught by Crabtree (see col. 8, lines 39-51).

The combination of Murphy, Calvert and Crabtree fails to explicitly teach wherein the position of the search object is calculated by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object.

However, the feature of calculating the position of an object by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object is very well known in the art as taught for example by Gwon.

In an analogous field of endeavor, Gwon teaches a triangulation technique for calculating the location of a wireless receiver based on the characteristics of signals received from fixed base units, wherein the final location of the receiver is obtained by computing the centroid of the smallest-area triangle formed by a three-point subset of six points (see p. 5 [0065-0066], p. 7 [0108-0121] and Fig. 6). According to Gwon, the

six points are intersections of three circles obtained by solving systems of equations for circles whose centers are locations of three base units (i.e. the measuring apparatuses), and whose radii are determined by signal strength measurements (see p. 5 [0065-0066], p. 7 [0108] and Fig. 6).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teaching of calculating the position of an object by solving an equation of circles as taught by Gwon, to the system of Murphy, Calvert and Crabtree, wherein the position of the search object is calculated by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object, in order to determine with a high level of accuracy the location of a wireless receiver such as an emergency 911 caller using a set of best-matching test points and then combining these points to create an enhanced smallest-polygon calculation to calculate the location of the wireless receiver with a high precision as taught by Gwon (see p. 1 [0004-0008] and p. 5 [0065-0066]).

Regarding claim 2, the combination of Murphy, Calvert, Crabtree and Gwon teaches all the limitations of claim 1. Murphy further teaches a measuring apparatus, further comprising: a unit transmitting radio waves receivable by the search object (see col. 7, lines 1-14, col. 4, lines 25-31 and Fig. 2); and a unit receiving a response to the radio waves from the search object (see col. 7, lines 1-14, col. 4, lines 25-31 and Fig. 2).

Regarding claims 4 and 5, Murphy teaches a service device for providing position information of a search object (see col. 4, line 51 through col. 5, line 18 and Fig. 1B;

shows a base station 20 [i.e. reads on a service device] that provides position information of an object 12 [i.e. reads on a search object]), comprising: a unit receiving, from a plurality of measuring apparatus for measuring a position of the search object, present position information of each of the plurality of measuring apparatuses and information about a distance between each of the plurality of measuring apparatuses making the measurement and the search object (see col. 4, lines 43-59, col. 10, lines 22-56 and col. 13, lines 37-57), and calculating the position information of the search object, based on the present position information and the information about the distance to the search object received from the measuring apparatus (see col. 5, lines 2-4, col. 6, lines 42-48 and col. 8, lines 13-16); and a unit transmitting to an apparatus the position information of the search object that has been calculated based on the present position information and the information about the distance to the search object received from each of the plurality of measuring apparatuses (see col. 4, lines 43-59 and col. 10, lines 3-56), wherein the service device is placed at a predetermined fixed location (see col. 4, lines 60-67, col. 7, lines 59-64 and Fig. 1B; shows a base station 20 placed at a predetermined fixed location from tracking units 10A-10C), wherein each of the plurality of measuring apparatuses is mobile (see col. 10, lines 3-56 and Fig. 3; shows mobile tracking units 10a-10c attached to moving vehicles 42a-42c [i.e. reads on the limitations "wherein each of the plurality of measuring apparatuses is mobile"]) and calculates only a distance between each of the plurality of measuring apparatuses and the search object, each distance being independent from a direction of the search object with respect each of the measuring apparatuses (see col. 4, lines 43-59 and col. 10, lines

43-45 [i.e. the teaching of Murphy that the distance between tracking units 10a-10c attached to moving vehicles 42a-42c (i.e. measuring apparatuses) and object 12 (i.e. the search object) is determined meets the claimed limitations of “calculates only a distance between each of the plurality of measuring apparatuses and the search object, each distance being independent from a direction of the search object with respect each of the measuring apparatuses”]), and the plurality of measuring apparatuses located around the search object cooperate with the service device (see col. 10, lines 46-52).

Murphy fails to explicitly teach a request apparatus requesting the position information of the search object and transmitting to the request apparatus the position information of the search object.

In an analogous field of endeavor, Calvert teaches a method and apparatus for accurately locating a communication device in a wireless communication system, wherein a requesting device such as a wireless/wireline telephone device sends a request for the location of a communication device to a wireless system controller (see p. 2 [0023], p. 4 [0034] and Fig. 1 [i.e. wireless/wireline telephone devices 101, 102 & 113 reads on a request apparatus requesting position information from wireless system controller 107 [i.e. reads on a measuring apparatus] of a communication device 101 [i.e. reads on a search object] in the wireless system 100]). According to Calvert, the search request preferably includes the identification (ID) or address of the communication device to be located and the address or ID of the requesting device to which the location is to be sent (see p. 4 [0034]).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Murphy with Calvert to include a request apparatus requesting the position information of the search object and transmitting to the request apparatus the position information of the search object, in order to accurately locate a communication device by including the identification (ID) or address of the communication device to be located in a search request to the system infrastructure as taught by Calvert (see p. 2 [0020] and p. 4 [0034]).

The combination of Murphy and Calvert fails to explicitly teach wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received.

In an analogous field of endeavor, Crabtree teaches a system and method for locating objects such as people, pets, and personal articles, wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received (see col. 8, lines 40-65 and Fig. 1).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Murphy and Calvert with Crabtree, wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received, in order to easily and securely locate search objects within a search range by transmitting a modulated radio frequency signal

including a digital address code that is compared to a stored address code in the search object to validate the requesting apparatus as taught by Crabtree (see col. 8, lines 39-51).

The combination of Murphy, Calvert and Crabtree fails to explicitly teach wherein the position of the search object is calculated by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object.

However, the feature of calculating the position of an object by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object is very well known in the art as taught for example by Gwon.

In an analogous field of endeavor, Gwon teaches a triangulation technique for calculating the location of a wireless receiver based on the characteristics of signals received from fixed base units, wherein the final location of the receiver is obtained by computing the centroid of the smallest-area triangle formed by a three-point subset of six points (see p. 5 [0065-0066], p. 7 [0108-0121] and Fig. 6). According to Gwon, the six points are intersections of three circles obtained by solving systems of equations for circles whose centers are locations of three base units (i.e. the measuring apparatuses), and whose radii are determined by signal strength measurements (see p. 5 [0065-0066], p. 7 [0108] and Fig. 6).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teaching of calculating the position of an object by

solving an equation of circles as taught by Gwon, to the system of Murphy, Calvert and Crabtree, wherein the position of the search object is calculated by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object, in order to determine with a high level of accuracy the location of a wireless receiver such as an emergency 911 caller using a set of best-matching test points and then combining these points to create an enhanced smallest-polygon calculation to calculate the location of the wireless receiver with a high precision as taught by Gwon (see p. 1 [0004-0008] and p. 5 [0065-0066]).

Regarding claims 8 and 14, Murphy teaches a method of cooperating with a service device that provides position information of a search object, comprising: transmitting radio waves receivable by the search object (see col. 4, lines 25-31 and Fig. 1B; shows communication links 18A, 18B, 18C between search object 12 and tracking units 10); receiving a response to the radio waves from the search object (see col. 4, lines 25-31 and Fig. 1B; shows communication links 18A, 18B, 18C between search object 12 and tracking units 10); calculating only a distance between each of the plurality of measuring apparatuses and the search object from the response received, the distance being independent from a direction of the search object with respect to the measuring apparatus (see col. 4, lines 43-59 and col. 10, lines 43-45 [i.e. the teaching of Murphy that the distance between tracking units 10a-10c attached to moving vehicles 42a-42c (i.e. measuring apparatuses) and object 12 (i.e. the search object) is determined meets the claimed limitations of "calculating only a distance between each of the plurality of measuring apparatuses and the search object, the distance being

independent from a direction of the search object with respect to the measuring apparatus"]); acquiring present position information of each of the plurality of measuring apparatuses (see col. 10, lines 22-56 and col. 7, lines 15-21); and transmitting the present position information and the distance of each of the plurality of measuring apparatuses to the service device (see col. 4, line 43 through col. 5, line 9, col. 7, lines 1-14 and col. 10, lines 22-56), wherein the service device is placed at a predetermined fixed location (see col. 4, lines 60-67, col. 7, lines 59-64 and Fig. 1B; shows a base station 20 placed at a predetermined fixed location from tracking units 10A-10C), and wherein each of the plurality of measuring apparatuses is mobile (see col. 10, lines 3-56 and Fig. 3; shows mobile tracking units 10a-10c attached to moving vehicles 42a-42c [i.e. reads on the limitations "wherein each of the plurality of measuring apparatuses is mobile"]), and the plurality of measuring apparatuses located around the search object cooperate with the service device (see col. 10, lines 46-52).

Murphy fails to explicitly teach a request apparatus requesting a position of the search object.

In an analogous field of endeavor, Calvert teaches a method and apparatus for accurately locating a communication device in a wireless communication system, wherein a requesting device such as a wireless/wireline telephone device sends a request for the location of a communication device to a wireless system controller (see p. 2 [0023], p. 4 [0034] and Fig. 1 [i.e. wireless/wireline telephone devices 101, 102 & 113 reads on a request apparatus requesting position information from wireless system controller 107 [i.e. reads on a measuring apparatus] of a communication device 101 [i.e.

reads on a search object] in the wireless system 100]). According to Calvert, the search request preferably includes the identification (ID) or address of the communication device to be located and the address or ID of the requesting device to which the location is to be sent (see p. 4 [0034]).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Murphy with Calvert to include a request apparatus requesting a position of the search object, in order to accurately locate a communication device by including the identification (ID) or address of the communication device to be located in a search request to the system infrastructure as taught by Calvert (see p. 2 [0020] and p. 4 [0034]).

The combination of Murphy and Calvert fails to explicitly teach wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received.

In an analogous field of endeavor, Crabtree teaches a system and method for locating objects such as people, pets, and personal articles, wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received (see col. 8, lines 40-65 and Fig. 1).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Murphy and Calvert with Crabtree, wherein a search range, within which the position of the search object is requested, is determined as a search

range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received, in order to easily and securely locate search objects within a search range by transmitting a modulated radio frequency signal including a digital address code that is compared to a stored address code in the search object to validate the requesting apparatus as taught by Crabtree (see col. 8, lines 39-51).

The combination of Murphy, Calvert and Crabtree fails to explicitly teach wherein the position of the search object is calculated by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object.

However, the feature of calculating the position of an object by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object is very well known in the art as taught for example by Gwon.

In an analogous field of endeavor, Gwon teaches a triangulation technique for calculating the location of a wireless receiver based on the characteristics of signals received from fixed base units, wherein the final location of the receiver is obtained by computing the centroid of the smallest-area triangle formed by a three-point subset of six points (see p. 5 [0065-0066], p. 7 [0108-0121] and Fig. 6). According to Gwon, the six points are intersections of three circles obtained by solving systems of equations for circles whose centers are locations of three base units (i.e. the measuring apparatuses),

and whose radii are determined by signal strength measurements (see p. 5 [0065-0066], p. 7 [0108] and Fig. 6).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teaching of calculating the position of an object by solving an equation of circles as taught by Gwon, to the method of Murphy, Calvert and Crabtree, wherein the position of the search object is calculated by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object, in order to determine with a high level of accuracy the location of a wireless receiver such as an emergency 911 caller using a set of best-matching test points and then combining these points to create an enhanced smallest-polygon calculation to calculate the location of the wireless receiver with a high precision as taught by Gwon (see p. 1 [0004-0008] and p. 5 [0065-0066]).

Regarding claims 10 and 16, Murphy teaches a method of providing position information of a search object (see col. 3, line 62 through col. 4, line 12, col. 6, lines 22-50 and Fig. 1B), comprising: receiving, from a plurality of measuring apparatuses that each measures a position of the search object, present position information of each of the plurality of measuring apparatuses and information about a distance between each of the plurality of measuring apparatuses making the measurement and the search object (see col. 4, lines 43-59, col. 7, lines 1-14 and col. 10, lines 22-56); calculating the position information of the search object, based on the present position information and the information about the distance to the search object received from each of the plurality of measuring apparatuses (see col. 4, lines 43-59, col. 7, lines 1-14 and col. 10,

lines 22-56); and transmitting to an apparatus the position information of the search object that has been calculated based on the present position information and the information about the distance to the search object received from each of the plurality of measuring apparatus (see col. 9, lines 4-15 and col. 10, lines 22-56), wherein each of the plurality of measuring apparatuses is mobile (see col. 10, lines 3-56 and Fig. 3; shows mobile tracking units 10a-10c attached to moving vehicles 42a-42c [i.e. reads on the limitations “wherein each of the plurality of measuring apparatuses is mobile”]) and calculates only a distance between each of the plurality of measuring apparatuses and the search object, each distance being independent from a direction of the search object with respect each of the measuring apparatuses (see col. 4, lines 43-59 and col. 10, lines 43-45 [i.e. the teaching of Murphy that the distance between tracking units 10a-10c attached to moving vehicles 42a-42c (i.e. measuring apparatuses) and object 12 (i.e. the search object) is determined meets the claimed limitations of “calculates only a distance between each of the plurality of measuring apparatuses and the search object, each distance being independent from a direction of the search object with respect each of the measuring apparatuses”]), and the plurality of measuring apparatuses located around the search object cooperate with the service device (see col. 10, lines 46-52).

Murphy fails to explicitly teach a request apparatus requesting the position information of the search object and transmitting to the request apparatus the position information of the search object.

In an analogous field of endeavor, Calvert teaches a method and apparatus for accurately locating a communication device in a wireless communication system, wherein a requesting device such as a wireless/wireline telephone device sends a request for the location of a communication device to a wireless system controller (see p. 2 [0023], p. 4 [0034] and Fig. 1 [i.e. wireless/wireline telephone devices 101, 102 & 113 reads on a request apparatus requesting position information from wireless system controller 107 [i.e. reads on a measuring apparatus] of a communication device 101 [i.e. reads on a search object] in the wireless system 100]). According to Calvert, the search request preferably includes the identification (ID) or address of the communication device to be located and the address or ID of the requesting device to which the location is to be sent (see p. 4 [0034]).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Murphy with Calvert to include a request apparatus requesting the position information of the search object and transmitting to the request apparatus the position information of the search object, in order to accurately locate a communication device by including the identification (ID) or address of the communication device to be located in a search request to the system infrastructure as taught by Calvert (see p. 2 [0020] and p. 4 [0034]).

The combination of Murphy and Calvert fails to explicitly teach wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received.

In an analogous field of endeavor, Crabtree teaches a system and method for locating objects such as people, pets, and personal articles, wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received (see col. 8, lines 40-65 and Fig. 1).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Murphy and Calvert with Crabtree, wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received, in order to easily and securely locate search objects within a search range by transmitting a modulated radio frequency signal including a digital address code that is compared to a stored address code in the search object to validate the requesting apparatus as taught by Crabtree (see col. 8, lines 39-51).

The combination of Murphy, Calvert and Crabtree fails to explicitly teach wherein the position of the search object is calculated by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object.

However, the feature of calculating the position of an object by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object is very well known in the art as taught for example by Gwon.

In an analogous field of endeavor, Gwon teaches a triangulation technique for calculating the location of a wireless receiver based on the characteristics of signals received from fixed base units, wherein the final location of the receiver is obtained by computing the centroid of the smallest-area triangle formed by a three-point subset of six points (see p. 5 [0065-0066], p. 7 [0108-0121] and Fig. 6). According to Gwon, the six points are intersections of three circles obtained by solving systems of equations for circles whose centers are locations of three base units (i.e. the measuring apparatuses), and whose radii are determined by signal strength measurements (see p. 5 [0065-0066], p. 7 [0108] and Fig. 6).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teaching of calculating the position of an object by solving an equation of circles as taught by Gwon, to the method of Murphy, Calvert and Crabtree, wherein the position of the search object is calculated by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object, in order to determine with a high level of accuracy the location of a wireless receiver such as an emergency 911 caller using a set of best-matching test points and then combining these points to create an enhanced smallest-polygon calculation to calculate the location of the wireless receiver with a high precision as taught by Gwon (see p. 1 [0004-0008] and p. 5 [0065-0066]).

Regarding claims 11 and 17, Murphy teaches a method of providing information of a search object through a system including a service device that provides the position information of the search object and a plurality of measuring apparatuses for reporting

distances to the search object to the search device (see col. 3, line 62 through col. 4, line 12, col. 6, lines 22-50 and Fig. 1B; shows tracking units 10A-10C [i.e. reads on a plurality of measuring apparatus] cooperating with a base station 20 [i.e. reads on a service device] that provides position information of an object 12 [i.e. reads on a search object]), comprising: receiving via the service device the position information of the search object calculated based upon the reporting from the measuring apparatuses, wherein the service device is placed at a predetermined fixed location (see col. 4, lines 43 through col. 5, line 9, col. 7, lines 1-14, col. 7, lines 59-64, col. 10, lines 22-56 and Fig. 1B; shows a base station 20 placed at a predetermined fixed location from tracking units 10A-10C), wherein each of the plurality of measuring apparatuses is mobile (see col. 10, lines 3-56 and Fig. 3; shows mobile tracking units 10a-10c attached to moving vehicles 42a-42c [i.e. reads on the limitations “wherein each of the plurality of measuring apparatuses is mobile”]) and calculates only a distance between each of the plurality of measuring apparatuses and the search object, each distance being independent from a direction of the search object with respect each of the measuring apparatuses (see col. 4, lines 43-59 and col. 10, lines 43-45 [i.e. the teaching of Murphy that the distance between tracking units 10a-10c attached to moving vehicles 42a-42c (i.e. measuring apparatuses) and object 12 (i.e. the search object) is determined meets the claimed limitations of “calculates only a distance between each of the plurality of measuring apparatuses and the search object, each distance being independent from a direction of the search object with respect each of the measuring apparatuses”]), and

the plurality of measuring apparatuses located around the search object cooperate with the service device (see col. 10, lines 46-52).

Murphy fails to explicitly teach transmitting by a request apparatus, a search request for the position information of the search object to the measuring apparatuses existing in a periphery of the apparatus.

In an analogous field of endeavor, Calvert teaches a method and apparatus for accurately locating a communication device in a wireless communication system, wherein a requesting device such as a wireless/wireline telephone device sends a request for the location of a communication device to a wireless system controller (see p. 2 [0023], p. 4 [0034] and Fig. 1 [i.e. wireless/wireline telephone devices 101, 102 & 113 reads on a request apparatus requesting position information from wireless system controller 107 [i.e. reads on a measuring apparatus] of a communication device 101 [i.e. reads on a search object] in the wireless system 100]). According to Calvert, the search request preferably includes the identification (ID) or address of the communication device to be located and the address or ID of the requesting device to which the location is to be sent (see p. 4 [0034]).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Murphy with Calvert to include, transmitting by a request apparatus, a search request for the position information of the search object to the measuring apparatuses existing in a periphery of the apparatus, in order to accurately locate a communication device by including the identification (ID) or address of the

communication device to be located in a search request to the system infrastructure as taught by Calvert (see p. 2 [0020] and p. 4 [0034]).

The combination of Murphy and Calvert fails to explicitly teach wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received.

In an analogous field of endeavor, Crabtree teaches a system and method for locating objects such as people, pets, and personal articles, wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received (see col. 8, lines 40-65 and Fig. 1).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Murphy and Calvert with Crabtree, wherein a search range, within which the position of the search object is requested, is determined as a search range in which the request apparatus is centered and in which a radio wave from the request apparatus is able to be received, in order to easily and securely locate search objects within a search range by transmitting a modulated radio frequency signal including a digital address code that is compared to a stored address code in the search object to validate the requesting apparatus as taught by Crabtree (see col. 8, lines 39-51).

The combination of Murphy, Calvert and Crabtree fails to explicitly teach wherein the position of the search object is calculated by solving an equation of circles, each

circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object.

However, the feature of calculating the position of an object by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object is very well known in the art as taught for example by Gwon.

In an analogous field of endeavor, Gwon teaches a triangulation technique for calculating the location of a wireless receiver based on the characteristics of signals received from fixed base units, wherein the final location of the receiver is obtained by computing the centroid of the smallest-area triangle formed by a three-point subset of six points (see p. 5 [0065-0066], p. 7 [0108-0121] and Fig. 6). According to Gwon, the six points are intersections of three circles obtained by solving systems of equations for circles whose centers are locations of three base units (i.e. the measuring apparatuses), and whose radii are determined by signal strength measurements (see p. 5 [0065-0066], p. 7 [0108] and Fig. 6).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teaching of calculating the position of an object by solving an equation of circles as taught by Gwon, to the method of Murphy, Calvert and Crabtree, wherein the position of the search object is calculated by solving an equation of circles, each circle having a radius equal to a distance between one of the plurality of measuring apparatuses and the search object, in order to determine with a high level of accuracy the location of a wireless receiver such as an emergency 911 caller using a

set of best-matching test points and then combining these points to create an enhanced smallest-polygon calculation to calculate the location of the wireless receiver with a high precision as taught by Gwon (see p. 1 [0004-0008] and p. 5 [0065-0066]).

Regarding claims 7, 13 and 19, the combination of Murphy, Calvert, Crabtree and Gwon teaches all the limitations of claims 5, 11 and 17. Calvert further teaches receiving setting of a search object range in the periphery of the request apparatus, and controlling electromagnetic waves carrying the search request at a predetermined receipt electric power level in the search object range (see p. 4 [0034 & 0037-0039]).

Regarding claims 3, 6, 9, 12, 15 and 18, the combination of Murphy, Calvert, Crabtree and Gwon teaches all the limitations of claims 1, 5, 8, 11, 13 and 17. Calvert further teaches wherein the search request contains information capable of specifying the request apparatus, and the unit transmitting the present position information and the distance information together with the specifiable information to the service device (see p. 4 [0034 & 0037-0039]).

## ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY S. ADDY whose telephone number is (571)272-7795. The examiner can normally be reached on Mon-Thur 8:00am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexander Eisen can be reached on 571-272-7687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anthony S Addy/
Examiner, Art Unit 2617

***/Alexander Eisen/***

***Supervisory Patent Examiner, Art Unit 2617*** ***17-Dec-08***